WHAT IS CLAIMED IS:

1. A biologically pure culture of yeast of the genus *Kluyveromyces*, wherein the culture is capable of proliferation in an aqueous medium comprising a pentose as the sole carbon source.

2. The biologically pure culture of claim 1, wherein the pentose is selected from the group consisting of xylose and L-arabinose.

3. The biologically pure culture of claim 1, wherein the yeast is of the species *Kluyveromyces marxianus*.

4. The biologically pure culture of claim 1, wherein the yeast is SSSJ-0.

5. A biologically pure culture of yeast of the genus *Kluyveromyces*, wherein the culture is capable of growth in an aqueous medium comprising cellulose or a cellulose derivative as the sole carbon source.

6. The biologically pure culture of claim 5, wherein the cellulose or cellulose derivative is selected from the group consisting of: carboxymethylcellulose, Avicel, Sigmacell, and combinations thereof.

7. The biologically pure culture of claim 5, wherein the cellulose or cellulose derivative is selected from the group consisting of: recycled paper sludge, brewer's spent grain, corn stover hydrolysate, sugared lignin hydrolysate, and combinations thereof.

8. The biologically pure culture of claim 5, wherein the yeast is of the species *Kluyveromyces marxianus*.

9. The biologically pure culture of claim 8, wherein the yeast is SSSJ-0.

10. The biologically pure culture of claim 5, wherein the culture is further capable of fermenting the cellulose or cellulose derivative to ethanol.

11. A method of producing ethanol from an aqueous medium comprising a saccharide selected from the group consisting of cellobiose, glucose, mannose, galactose, and combinations thereof, the method comprising the steps of

(a) contacting an aqueous medium comprising a saccharide selected from the group consisting of cellobiose, glucose, mannose, galactose, and combinations thereof, with a biologically pure culture of claim 1; and

(b) incubating the aqueous medium under conditions wherein the saccharide is fermented to ethanol.

12 The method of claim 11, further comprising the step of recovering the ethanol.

13. The method of claim 11, wherein the aqueous medium is incubated at a temperature between about 43 °C and about 45 °C.

14. The method of claim 11, wherein the yeast is of the species *Kluyveromyces marxianus*.

15. The method of claim 14, wherein the yeast is SSSJ-0.

16. A method of producing ethanol from an aqueous medium containing cellulose, the method comprising the steps of

(a) contacting an aqueous medium containing cellulose with a biologically pure culture of claim 5; and

(b) incubating the aqueous medium under conditions wherein the cellulose is fermented to ethanol.

17 The method of claim 16, further comprising the step of recovering the ethanol.

18. The method of claim 16, wherein the aqueous medium is incubated at a temperature between about 43 °C and about 45 °C.

19. The method of claim 16, wherein the yeast is of the species *Kluyveromyces marxianus*.

20. The method of claim 19, wherein the yeast is SSSJ-0.

21. A method of producing a biologically pure culture of yeast capable of growth in a medium comprising cellulose or a cellulose derivative as the sole carbon source, the method comprising the steps of

(a) providing a sample of waste material comprising a yeast;

(b) culturing a yeast derived from the waste material in a medium comprising cellulose or a cellulose derivative as the sole carbon source; and

(c) isolating a biologically pure culture of the yeast, thereby yielding a biologically pure culture of yeast capable of growth in a medium comprising cellulose or a cellulose derivative as the sole carbon source.

22. The method of claim 21, further comprising the step of culturing the sample of the waste material in an enrichment medium containing glucose.

23. A method of producing a biologically pure culture of yeast capable of growth in a medium comprising a pentose as the sole carbon source, the method comprising the steps of

(a) providing a sample of waste material comprising a yeast;

(b) culturing the yeast in a medium comprising a pentose as the sole carbon source, and

(c) isolating a biologically pure culture of the yeast, thereby yielding a biologically pure culture of yeast capable of growth in a medium comprising a pentose as the sole carbon source.

24. The method of claim 23, further comprising the step of culturing the yeast in a medium comprising cellulose or a cellulose derivative.

25. The method of claim 23, further comprising the step of culturing the yeast in an enrichment medium comprising glucose.

26. The method of claim 23, further comprising the step of culturing the yeast in an enrichment medium comprising a pentose.

27. A method of producing a biologically pure culture of yeast capable of growth in a medium comprising a hemicellulose or a hemicellulose derivative as the sole carbon source, the method comprising the steps of

(a) providing a sample of a waste material comprising a yeast;

(b) culturing the yeast in a medium comprising hemicellulose or a hemicellulose derivative as the sole carbon source, and

(c) isolating a biologically pure culture of the yeast, thereby yielding a biologically pure culture of yeast capable of growth in a medium comprising a hemicellulose derivative as the sole carbon source.

28. The method of claim 27, further comprising the step of culturing the yeast in an enrichment medium comprising glucose.

29. The method of claim 27, further comprising the step of culturing the yeast in an enrichment medium comprising a pentose.

30. The method of claim 27, further comprising the step of culturing the yeast in an enrichment medium comprising a hextose.